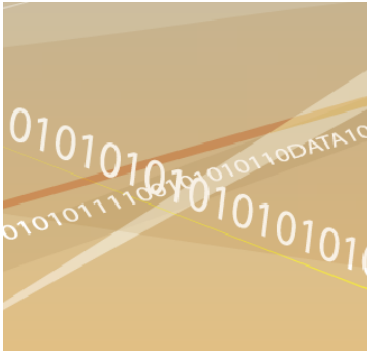


IT Architecture
North Carolina
Department of Health and Human Services





Version 1.0

NC DHHS Division of Information Resource Management (DIRM)

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1. Introduction

1.1. Purpose

The North Carolina Department of Health and Human Services (NC DHHS) submits this *IT Architecture* to the following entities in response to Session Law 2005-0276:

- Office of Information Technology Services (NC ITS)
- Senate Appropriations Committee on Health and Human Services
- House of Representatives Appropriations Subcommittee on Health and Human Services
- Fiscal Research Division of the NC General Assembly

NC DHHS aims its *IT Architecture* to change the Department's IT processes and information systems so that they align with the goals of NC DHHS divisions and offices.

Note. Readers of this *IT Architecture* document should be familiar with the Business Plan, 2007-2009 Biennium IT Plan, and Technology Plan for NC DHHS.

1.2. Scope

The *IT Architecture* discussed herein is an enterprise, service-oriented, IT architecture that applies to all NC DHHS entities with information technology-related responsibilities and authorities, including the Division of Information Resource Management (DIRM), IT units in the other divisions and offices of the Department, and any agents of the same.

After reviewing this document, readers should have an understanding of the following:

- The baseline NC DHHS IT architecture and related concerns
- The preferred, future IT architecture for NC DHHS
- Principles that set the direction for technical services
- The target standards for technical services that are to be used to govern and control the development and delivery of information systems

NC DHHS intends to review its *IT Architecture* annually, modify it as needed, and expand it as the Department moves forward.

2. Current IT Architecture Summary

Over the last five years, NC DHHS has relied almost entirely on the NC Statewide Technical Architecture (NC STA)¹ to guide decisions surrounding IT resources. The principles and standards of the NC STA served NC DHHS well in its work to carry out corrective and perfective maintenance on existing systems. However, as given by admissions in the *Business Plan*, the Department has not been able to adapt fast

¹ *Statewide Technical Architecture*, Enterprise Technology Strategies (ETS), NC Office of Information Technology Services, <http://www.ncsta.gov>

enough to the more recent and mounting changes in trends, policies, and regulations. A number of conditions are causative, including the following:

- Deficient documentation, technology, and code
- Lengthy development cycles
- Limitations to data sharing and manipulation
- Separation of knowledgeable contracted or outsourced development staffs
- Inability to look across enterprise business requirements to find consolidation opportunities

2.1. Documentation, Technology, and Code

Not all maintenance teams across the Department have maintained their system documentation with code changes made over the years. Efforts to adapt and build modern systems are convoluted, as it is difficult to identify with certainty which modules are affected directly and/or indirectly by changes to requirements.

Additionally, most of the Department's major systems are in COBOL/Mainframe environments (see Figure 1 and Figure 2), which are well suited for fixed business activities and processes, but not for those that must be agile to respond to repeated policy and regulatory changes. Furthermore, the risk is higher for these systems, which traditionally provide bundled services. A single change to one module often has a cascading effect on the functionality delivered by other modules and/or system interfaces.

Lastly, as business rules have changed over the years, some systems no longer call stored procedures and some users no longer need stored output to meet business requirements. Yet, these same procedures and output files remain embedded in active code and stored files.

Altogether, the documentation, technology, and code issues make continuing the maintenance of some systems difficult, and costly. It is frequently more economical to replace applications entirely.

2.2. Development Cycles

Traditionally with complex IT initiatives, NC DHHS has experienced lengthy development and implementation cycles. NC DHHS has reduced the amount of in-house development and has urged the procurement of commercial-off-the-shelf (COTS) products. Even with the changes, there are further improvements necessary to decrease development and implementation timeframes.

Figure 1 Distribution of Programming Languages Used

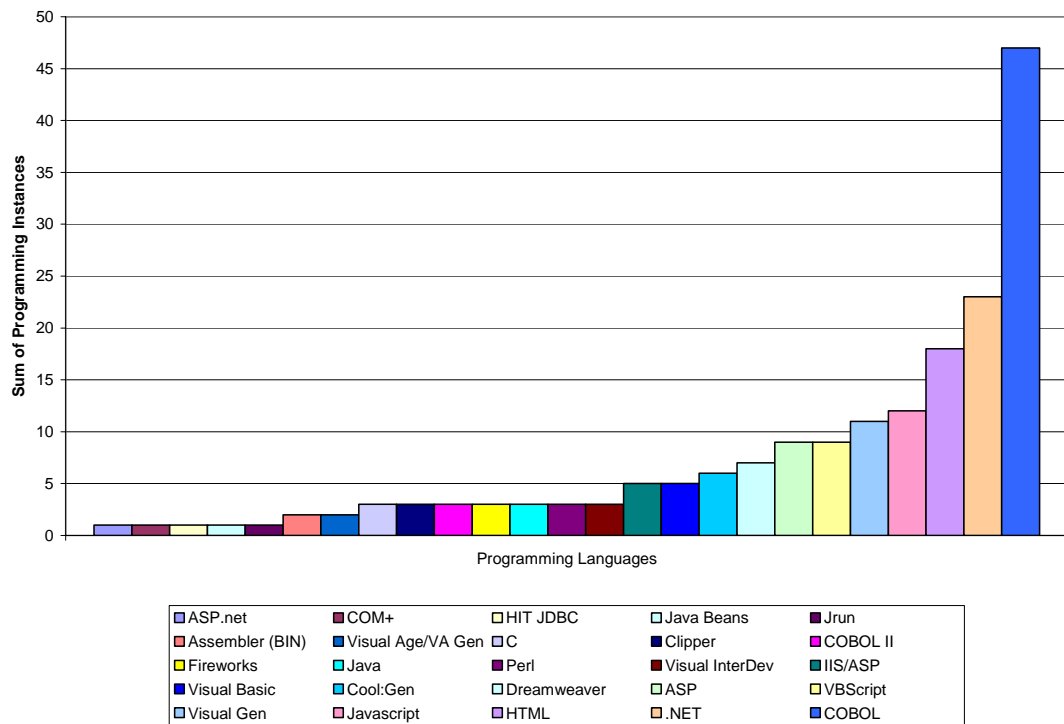
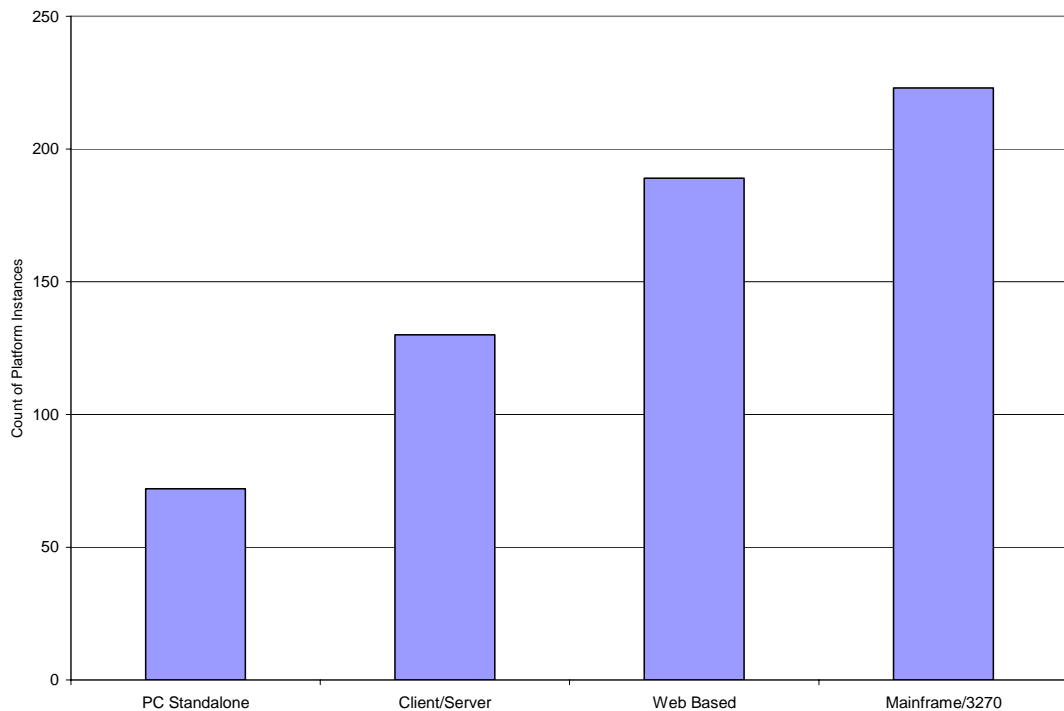


Figure 2 Distribution of Platforms Used



2.3. Data Sharing and Manipulation

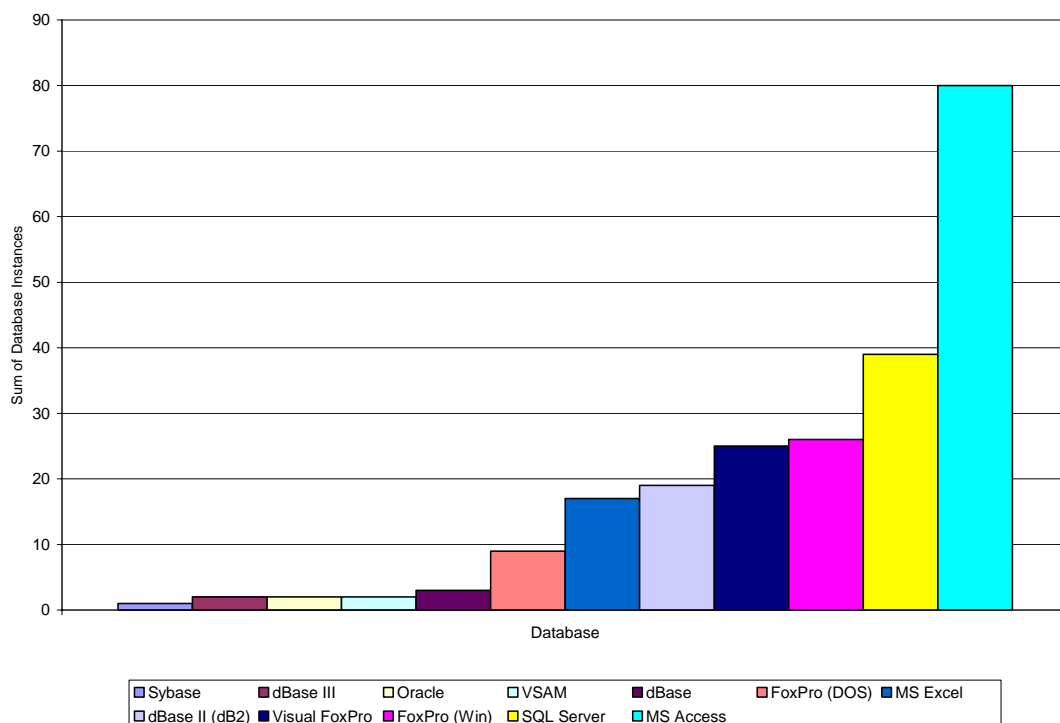
Some, but not all NC DHHS divisions and offices share an enterprise data warehouse, which receives data from numerous production systems. The data warehouse collects data into a standard model. The Department recognizes a need to expand the use of the data warehouse, which may replace some MS Excel and MS Access databases (see Figure 3) that some end users have built to enable the flexibility they need to share and manipulate data.

2.4. Outsourced and Contracted Development

The State has discontinued its IT Supplemental Staffing Convenience Contract and replaced it with a Short Term IT Staffing Contract. As the Department establishes State positions to replace those contract positions needed long-term, it has experienced some retention issues.

The separation of development and maintenance contractors, some of whom had supported systems for many years, leaves NC DHHS without expert knowledge of the inner workings of some very important (and in some cases very critical) systems. The problem intensifies when the lack of expert system knowledge is joined with the deficiencies in system documentation (see *Section 2.1*), and the fact that the pool of resources with skills and experience using the older, more structured programming languages is dwindling.

Figure 3 Distribution of Database Technologies in Use



2.5. Enterprise View

NC DHHS built many of the applications in its portfolio years ago, using the rationale and funding of individual program areas, and applying the technologies, and best practices available at the time. Now, the Department has outgrown numerous,

fragmented systems that resulted from the unsystematic approach. With a new set of best practices, business requirements, funding priorities, and technologies, NC DHHS clearly sees that its current IT environment is duplicative, costly to maintain, at times proprietary, and subsequently restricts collaboration, integration, and real-time access to program information across the Department.

In consideration of all the limitations to the current IT architecture, NC DHHS has reorganized its view on how to deliver information systems and technology to meet the business needs of the Department.

3. Preferred Future IT Architecture Summary

Looking ahead, NC DHHS intends to set up its IT Architecture in a manner that lowers the costs of development and integration, steps up application procurement, development, and deployment processes, and reduces architecture risk. To do so, NC DHHS will combine two best practice models:

- Enterprise Architecture
- Service-oriented Architecture

3.1. Best Practices

Enterprise architecture is generally described as a current and/or future structure and behavior for an organization's processes, information systems, personnel and organizational sub-units, so that they align with the organization's core goals and strategic direction.² Overall, enterprise architectures define IT standards to steer an organization from a status quo state toward a specific strategic direction. Taking this approach, for example, an organization may define standards using of the following categories:

- Strategic Capabilities Architecture
- Business Architecture
- Information Architecture
- Data Architecture
- Systems Architecture
- Computer Architecture

Conversely, a *service-oriented architecture (SOA)* is not articulated in terms of the traditional layers of information systems and technologies. It is implemented using a wide range of technologies and is expressed in terms of loosely-coupled technical services that are aimed to support the requirements of business processes and software users.³

NC DHHS will implement an enterprise, service-oriented IT architecture, by implementing standards for technical services to enable the Department as a whole to move toward its strategic direction.

² Common definition from Wikipedia, http://en.wikipedia.org/wiki/Enterprise_architecture

³ Common definition from Wikipedia, http://en.wikipedia.org/wiki/Service-oriented_architecture

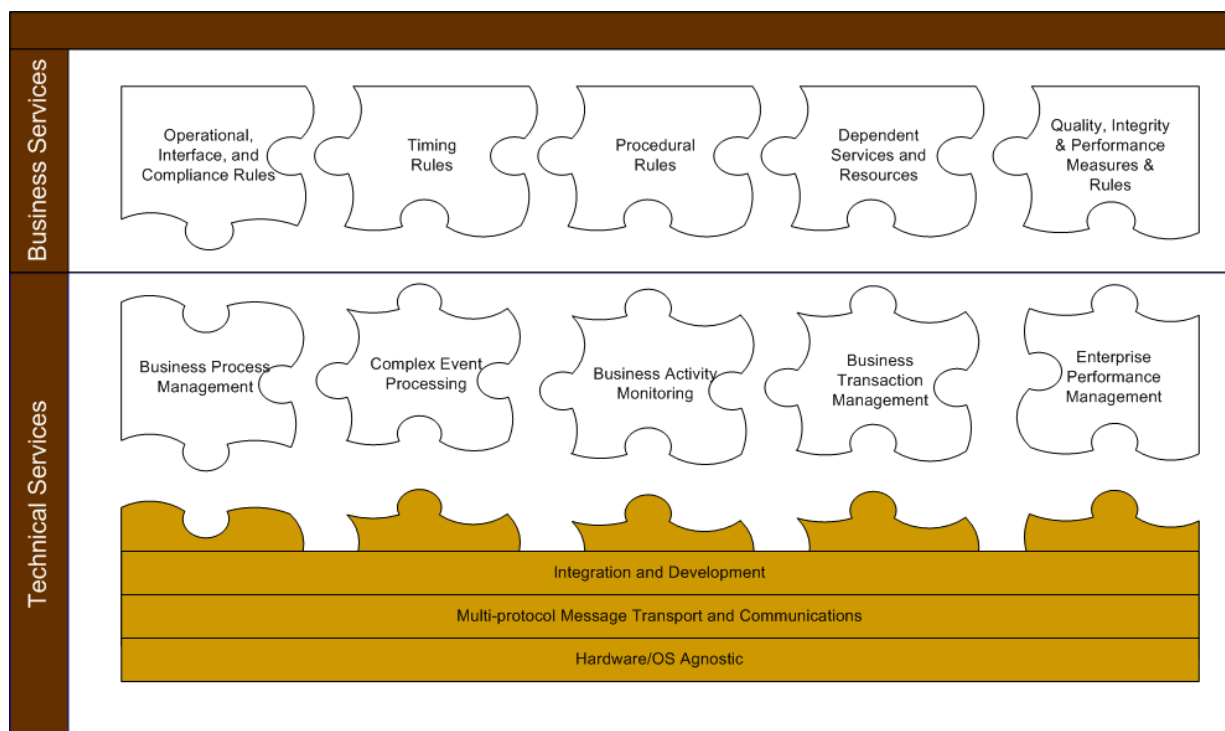
3.2. Principles

The principles on which the NC DHHS IT Architecture is based follow:

- Business processes and operations will drive changes to information systems and the technology infrastructure
- NC DHHS will preserve and leverage information systems and technology assets for as long as those assets deliver net business value over the benefits of replacement
- Business units will control the automation of their core business activities through the use of service level agreements (SLAs) entered into with IT units
- IT units will fulfill SLA requirements without distracting business units with the limitations and complexities of specific technologies
- IT units will deliver technical services to business units that are sharable and composable with other services

Adhering to these philosophies, NC DHHS anticipates that the Department will move away from its traditionally, massive systems to systems that are more componentized, easier to integrate and maintain, and have lower total cost of ownership (TCO). Figure 4, is a conceptual view of the future IT Architecture for NC DHHS.

Figure 4 Conceptual View of Future Architecture⁴

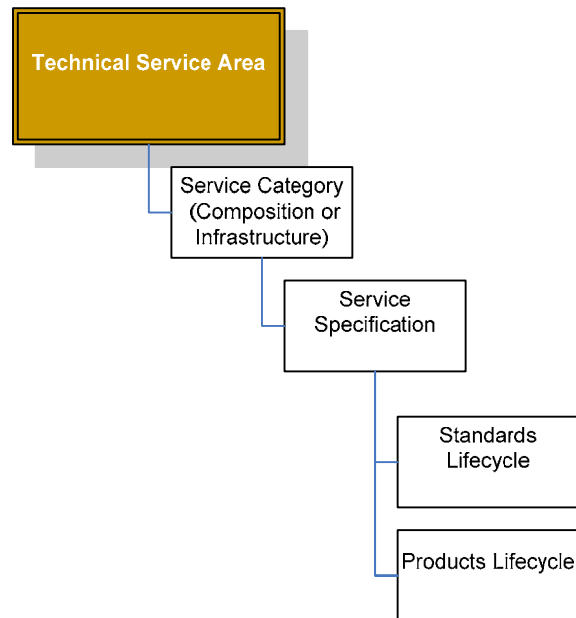


⁴ Modeled from *Embracing SOA: The Benefits of Integration Independence*, David McGoveran, Alternative Technologies, 2006

3.3. Technical Reference Model

Section 4, of this *IT Architecture* discusses the standards and technologies necessary to enable the delivery of technical services. NC DHHS will draw on the technical reference model illustrated in Figure 5, to ensure a common vocabulary when referring to the components of its IT architecture.

Figure 5 Technical Reference Model



Section 4 uses the following lifecycle statuses:

- | | |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Current | Standards and products with this lifecycle classification exist in the baseline IT architecture |
| Contain | Standards and products with this lifecycle classification are disallowed in future IT efforts |
| Target | Standards with this lifecycle classification are those meant to move the Department in the strategic direction that is desired

There are no products targeted in this <i>IT Architecture</i> document. As NC DHHS initiates projects, it will first evaluate requirements against any State-level enterprise solutions that are available. Barring the availability of State-level solutions, NC DHHS may pursue other products available in the market. |
| Emerging | Standards with this lifecycle classification have only recently been introduced in the market and are so new that to use them would risk reductions in stability and productivity

There are no products listed as emerging in this <i>IT Architecture</i> document. |

4. Technical Services & Targeted Standards

4.1. Composition Services

There are five (5) service specifications, in the composition category:

- Business Process Management (BPM)
- Business Activity Monitoring (BAM)
- Business Transaction Management (BTM)
- Complex Event Processing (CEP)
- Enterprise Performance Management (EPM)

A description of each service specification, as well as the lifecycle for the Department's standards and products follows.

4.1.1. Business Process Management (BPM)

Business Process Management (BPM) services allow for the direct execution of business processes without costly and time intensive development of required software. In addition, these tools can monitor the execution of business processes, and provide the managers of NC DHHS with the means to analyze their performance and make changes to the original processes in real-time. Using a BPM System, NC DHHS can then merge modified processes into the current business process atmosphere.⁵

Table 1 lists the NC DHHS standards and products for BPM.

Table 1 NC DHHS BPM Standards and Products

	Current	Contain	Target	Emerging
Standards	N/A	N/A	<ul style="list-style-type: none"> ▪ BPEL (preferred) ▪ .Net (alternative) ▪ JAVA (alternative) ▪ User and developer interface tools ▪ Process modeling tool ▪ Business rule engine ▪ Enterprise application integration (EAI) engine ▪ BPM repository and database ▪ BPM engine ▪ Composable with standards and products of other NC DHHS technical services 	<ul style="list-style-type: none"> ▪ Business Process Modeling Notation (BPMN) with Business Process Modeling Diagram (BPD) ▪ XML ▪ Complex B2B
Products	N/A	N/A	Refer to Section 3.3	Refer to Section 3.3

⁵ General definition and description from Wikipedia,
http://en.wikipedia.org/wiki/Business_process_management

4.1.2. Business Activity Monitoring (BAM)

Business Activity Monitoring (BAM) is software that aids to monitor business processes that organizations have implemented in computer systems. BAM is an enterprise solution primarily intended to provide a real-time summary of business processes to operations managers and upper management. As such, BAM presents dashboards that contain key performance indicators (KPI) that support root cause analysis and alerts that warn of impending problems.⁶

Table 2 lists the NC DHHS standards and products for BAM.

Table 2 NC DHHS BAM Standards and Products

	Current	Contain	Target	Emerging
Standards	N/A	N/A	<ul style="list-style-type: none"> User-friendly dashboard Business intelligence-based analysis (preferred) Rule-based analysis (alternative) Composable with standards and products of other NC DHHS technical services 	<ul style="list-style-type: none"> Ability to predict failures
Products	N/A	N/A	Refer to Section 3.3	Refer to Section 3.3

4.1.3. Business Transaction Management (BTM)

Business Transaction Management (BTM) services provide insight into transaction flow across the enterprise, accelerate problem resolution through ability to pinpoint the component(s) that cause a slow-down or failure in a transaction, capture problem data, and automatically connect with tools for problem solving. BTM improves service quality by reducing the number of incomplete or abandoned transactions and related business costs.

Table 3 lists the NC DHHS standards and products for BTM.

Table 3 NC DHHS BTM Standards and Products

	Current	Contain	Target	Emerging
Standards	N/A	N/A	<ul style="list-style-type: none"> Isolate location of failure Visibility into network and distributed systems Real-time views, alarms and fault reporting Historical analysis (preferred) Performance monitoring from the desktop (perspective of end users) Resource allocation based business priorities Composable with standards and products of other NC DHHS technical services 	<ul style="list-style-type: none"> Integrate with tools to fix failures Fix failures
Products	<ul style="list-style-type: none"> BPC Patrol 	N/A	Refer to Section 3.3	Refer to Section 3.3

⁶ General definition and description from Wikipedia,
http://en.wikipedia.org/wiki/Business_activity_monitoring

4.1.4. Complex Event Processing (CEP)

Complex Event Processing (CEP) services are technologies for building and managing event-driven information systems. CEP is primarily an event-processing concept that deals with the task of processing multiple events from an event cloud with the goal of identifying the meaningful events within the event cloud. CEP employs techniques such as detection of complex patterns of many events, event correlation and abstraction, event hierarchies, and relationships between events such as causality, membership, timing, and event-driven processes. Table 4 lists the NC DHHS standards and products for CEP.⁷

Table 4 NC DHHS CEP Standards and Products

	Current	Contain	Target	Emerging
Standards	N/A	N/A	<ul style="list-style-type: none"> Rules engine Esper (preferred) Composable with standards and products of other NC DHHS technical services 	<ul style="list-style-type: none"> Dashboard Pre-testing
Products	<ul style="list-style-type: none"> Zeke (semi-manual) JCL Cron 	N/A	Refer to Section 3.3	Refer to Section 3.3

4.1.5. Enterprise Performance Management (EPM)

Enterprise Performance Management (EPM) services are automated tools that translate NC DHHS mission and strategies into a comprehensive set of performance measures that provide the framework for strategic measurement and management. EPM services provide the following capabilities:

- Ability to monitor, measure and manage performance using automated tools
- Ability to focus on performance issues and manage corrective actions
- Ability to communicate strategic objectives and align stakeholders at the organization, team and individual level
- Accountability and ownership of key objectives, metrics and initiatives

Table 5 lists the NC DHHS standards and products for EPM

Table 5 NC DHHS EPM Standards and Products

	Current	Contain	Target	Emerging
Standards	N/A	N/A	<ul style="list-style-type: none"> Drill down Balanced Scorecard Risk management Forecasting and budgeting Performance management Composable with standards and products of other NC DHHS technical services 	N/A

⁷ General definition and description from Wikipedia,
http://en.wikipedia.org/wiki/Complex_event_processing

	Current	Contain	Target	Emerging
Products	▪ COGNOS	N/A	Refer to Section 3.3	Refer to Section 3.3

4.2. Infrastructure Services

There are three (3) service specifications in the infrastructure category:

- Integration and Development
- Multi-protocol Message Transport and Communications
- Hardware/OS Agnostic

4.2.1. Integration and Development

Integration and Development services use Enterprise Application Integration (EAI) systems and architectural principles to bring together (integrate) a set of enterprise computer applications, with an emphasis on decoupling the data integration (application adaptors and message transformations) from the business processes that use data.⁸ Integration and Development services enable the following:

- Ensuring the consistency of information in multiple technical services
- Linking business processes across technical services
- Extracting business policies or rules from applications and implementing them in an EAI system, so if one technical service is replaced with another, the business rules do not have to be re-implemented
- Serves as the front-end of cluster of applications, providing a seamless access interface to multiple technical services

Table 6 lists the NC DHHS standards and products for Integration and Development.

Table 6 NC DHHS Integration and Development Standards and Products

	Current	Contain	Target	Emerging
Standards	▪ n-Tier	N/A	<ul style="list-style-type: none"> ▪ n-Tier ▪ Open Source ▪ Portable ▪ Interoperable/favors heterogeneous SOA environment (SODA) ▪ Propagate changes to relevant technical services/applications (mediation) ▪ Front-end all accesses from the 'outside world' to any of the technical services/applications (federation) ▪ Composable with standards and products of other NC DHHS technical services 	N/A

⁸ General definition and description from Wikipedia
http://en.wikipedia.org/wiki/Application_and_Data_Integration

	Current	Contain	Target	Emerging
Products	<ul style="list-style-type: none"> Refer to Figure 1 Distribution of Programming Languages Used 	<ul style="list-style-type: none"> Visual Basic C 	Refer to Section 3.3	Refer to Section 3.3

4.2.2. Multi-protocol Message Transport and Communication

Services for Multi-protocol Message Transport and Communications allow organizations to send semantically precise messages between computer systems following published enterprise standards. An Enterprise Messaging System (EMS) promotes service-oriented architectures by allowing changes in the formats of messages to have minimum impact on message subscribers.⁹

Table 7 lists the NC DHHS standards and products for Multi-protocol Message Transport and Communication

Table 7 NC DHHS Multi-protocol Message Transport and Communication Standards and Products

	Current	Contain	Target	Emerging
Standards	<ul style="list-style-type: none"> SOAP FTP SMTP 	N/A	<ul style="list-style-type: none"> Service-centric - support web service creation, deployment, and management, multi-channel communication, and reuse of existing enterprise messaging infrastructure for communication (preferred) Support all common message formats including: MIME, SOAP, FTP, HTTP, SMTP, HL7, and TCP/IP (alternative) Stateless - enable session establishment (preferred) Custom, client-specific context stored (alternative) Composable with standards and products of other NC DHHS technical services 	Advanced Message Queuing Protocol (AMQP)
Products	<ul style="list-style-type: none"> MQ Series Web Sphere Java Message Service (JMS) 	<ul style="list-style-type: none"> MQ Series 	Refer to Section 3.3	Refer to Section 3.3

4.2.3. Hardware/OS Agnostic

Hardware/OS Agnostic services enable technical services to depend on pre-existing software that hides the differences between the platforms—called abstraction of the platform—such that the program itself is unaware of the platform on which it is running. Agnostic services allow NC DHHS to deploy applications that are platform independent and do not rely on any special features of any single platform.

⁹ General definition and description from Wikipedia
http://en.wikipedia.org/wiki/Enterprise_messaging_system

Alternatively, if the applications are reliant, they could handle those special features to manage multiple platforms.¹⁰

Table 8 lists the NC DHHS standards and products for Hardware/OS Agnostic services.

Table 8 NC DHHS Hardware/OS Agnostic Standards and Products

	Current	Contain	Target	Emerging
Standards	N/A	N/A	<ul style="list-style-type: none"> ▪ Virtualization ▪ Multi-core processing w/sufficient power to support integration and prevent XML parsing and composition ▪ ITIL ▪ HW/OS independence ▪ Minimalistic high density hardware ▪ Does not require FAT client ▪ Cross-platform programming (alternative) ▪ JVM standard (alternative) ▪ Software capable of formatting interface to fit hardware environment ▪ Wireless Application Protocol (WAP) ▪ Composable with standards and products of other NC DHHS technical services 	<ul style="list-style-type: none"> ▪ Vendor neutral hardware ▪ OS Agnostic ▪ Virtual server environment
Products	N/A	<ul style="list-style-type: none"> ▪ Vendor-specific platforms 	Refer to Section 3.3	Refer to Section 3.3

¹⁰ General definition and description from Wikipedia <http://en.wikipedia.org/wiki/Cross-platform>

5. Appendices

5.1. Terms and Definitions¹¹

Term	Definition
Adaptation	See: Maintenance (Adaptive)
Application	A set of software that provides functionality to the business process or is necessary to operate and maintain the automated information systems
Application architecture	The model(s) that describes how a set of applications will be structured and the interfaces and design rules for each of its parts (e.g., isolating graphical user interface code from business logic).
Application platform	A collection of tightly integrated computing hardware, peripherals, operating system, and middleware upon which an application is built The application provides some of its functionality by accessing services residing on the application platform through an Application Program Interface.
Application platform entity	The set of resources, including hardware and software that provides all the services to application software executing on that platform, including the ability to have application-to-application services
Application portfolio	The aggregation of applications required to support the Department.
Application Service Provider	Organizations that provide application programs or services for a fee over the Internet These programs or services were previously made available from the Enterprise's server or personal computers.
Automated information system (AIS)	A combination of computer hardware and software, data, and telecommunications that performs functions for an organization
Baseline	A set of items that have been formally reviewed and agreed upon; the agreement is between key stakeholders, such as the item's producer and consumer (user). A baseline establishes a fixed point for further development or use. Items in a baseline can be modified only through formal change control procedures in which the stakeholders participate.
Baseline data	Initial collection of data to establish a basis for comparison
BCP	Business Continuity Plan
Benchmark	A standard or point of reference used in measuring and/or judging quality or value. (National Performance Review)
Business	Any Enterprise that provides a type of offering; the organizational entity being studied, regardless of its size or purpose or focus on either private or public sector
Business process	A set of interacting activities and decisions that produce one or more products or services for customers of the business Enterprise
Business process reengineering	The significant redesign and restructuring of an organization's business operations and management practices to achieve a significant change in performance, such as cost, cycle time, service, and quality; traditional organizational boundaries are eliminated and replaced by an emphasis on core business processes.
Business rule	An expression of the business policies and procedures (e.g., Agency or Program), often embedded within the logic of an application program
Capacity	A measure of an organization's output, for example participation rates in a Program or other Federal reporting requirements. For the IT organization, this may resolve into measures of efficiency or effectiveness of meeting IT evolving needs.

¹¹ Universal terms and definitions extracted from the *Glossary of the IT Planning and Management Guides*, National Human Services IT Resource Center (NHSITRC), Administration for Children & Families (ACF), US Department of Health and Human Services.

Term	Definition
CIO	Chief Information Officer
CMM	Capability Maturity Model
CNDS	Common Name Database Services
Committed Dependency	Reliance that may result in complete failure of the receiving project
Component	A software item that can be independently developed, distributed (provided and/or sold), and used in its binary form separable from the original context. Components can be used to develop distributed applications in which the components can communicate with one another. A component is based on a component model, such as COM or JavaBeans. Component models support runtime interface exposure and discovery, component properties, persistence, event handling, application builder support, distribution (location transparency), and component packaging. Components have two distinct parts: specifications (or interfaces) and implementations. Components are typically generated with object-oriented approaches, but this is not essential, as long as they can be used as objects.
Core competency	A bundle of skill sets or capabilities that significantly contribute to an organization's ability to satisfy the customer, offer unique services, or have future value.
Core process	The fundamental activities or group of activities, so critical to an organization's success that failure to perform them in an exemplary manner will result in deterioration of the organization's mission
COTS	Commercial Off-the-Shelf
Critical Dependency	Reliance that may result in the partial or complete failure of not only the receiving project but also its mission, related systems, structures, or projects
Critical success factors	Those few areas where things must go right for the Enterprise to be considered successful in achieving its mission; CSFs are internal and external states and events that can have significant impact on perceived results.
CSDW	Client Services Data Warehouse
CTO	Chief Technology Officer
Cultural filter	A concept that describes how one delivers, views, or interprets information in different regions; for instance, telephone interviews or face-to-face interviews may be necessary given the interviewee's circumstances.
Culture	The sum of individual opinions, shared mindsets, values, and norms
Data	Information absent its context; a representation of facts, concepts, and instructions in a defined format and structure that permits the processing of interpretation by humans or machines
DDS	Disability Determination Services
DHHS	Department of Health and Human Services
EDM	Electronic Document Management
EHR	Electronic Health Record
Enterprise	The whole (or portion) of the State Department (or additional Agencies) that is affected by change in the IT infrastructure. This scope is necessary to establish the boundaries, within which the Department decision makers can manage the interoperability and integration within and across this boundary.
Enterprise application integration	The application of technology to consolidate and coordinate disparate legacy applications and databases to extend their useful lifetime across the enterprise; the interoperability generally relies on message-oriented middleware with adaptors and or connectors that allow existing applications to interact by moving, routing, and transforming data between them in real time.

Term	Definition
Entity	A discrete, identifiable element of technology; an entity may be made up of subsidiary entities and may be part of a larger entity. As an element of technology, an entity is a "thing"; and can be characterized in part by the technology used to implement it. For example, a candle and a light bulb are both implementations of a "light source" entity.
Environment	Circumstances and conditions that interact with and affect an organization; these can include economic, political, cultural, and physical conditions inside or outside of the organization. (National Performance Review)
EPICS	Enterprise Program Integrity Control System
EPMO	Enterprise Project Management Office
FSIS	Food Stamp Information System
Function (business)	A collection of resources (equipment, networking, individuals) in a single area of operations, such as finance, accounting, personnel, production, engineering, operations, development, or support.
Goal	A general target the Department or organization wishes to reach in a specific area. It is a broad direction for managerial decision-making, often stated in terms of qualitative measures. Goals need to be achieved for the Department or organization to achieve its mission.
Guiding principles	The shared values and management or technical style of the Enterprise; they articulate the ethical standards by which the organization makes decisions and conducts activities.
HEARTS	Healthcare Enterprise and Accounts Receivable Tracking System
HIPAA	Health Insurance Portability and Accountability Act of 1996
Information	Data that has been given meaning by human reference; data becomes information only when it is placed into a meaningful context or relationship.
Information appliance	Combines the application software and application platform entities into one entity This term is used when the presence of configurable and/or separately procurable software is not visible to the user of a particular information technology. Examples: set-top cable TV boxes, videocassette recorders, television sets, fax machines, cell phones.
Information technology	The processing equipment, interconnecting (networking) equipment, and the software entities that operate within this equipment
Integration	Combining separately developed parts into a whole so that they work together. The means of integration may vary, from simply mating the parts together at an interface, to radically altering the parts or providing something to mediate between them.
Interface	A boundary between two or more entities such as human-computer or application program to application
Interoperability	The ability of independently developed and fielded applications that execute on heterogeneous computer platforms to communicate with one another and to exchange and use information (content, format, and semantics)
IOSM	Infrastructure, Operations, and Systems Management
IPRS	Integrated Payment and Reporting System
ITIL	Information Technology Infrastructure Library
ITS	Office of Information Technology Services
Legacy system	Jargon for an AIS (or set of applications) that is currently in use, and initially deployed many years ago, using a computing infrastructure that is several generations old. These systems tend to be critical to the business and cannot be easily replaced or cost-effectively maintained. They are approaching or have reached the end of their practical operational life span.
LIEAP	Low-Income Energy Assistance Program

Term	Definition
Maintenance	The process of modifying a system or component after delivery to correct faults, improve performance or other attributes, or adapt to a changed environment, with the purpose of maintaining the value of the existing system.
Maintenance (adaptive)	Maintenance performed to make a system usable in a changing environment. Adaptation refers to evolutionary changes (usually involves a progressive modification of some structure or structures), which a system makes in order to cope with the changes in the environment, while still keeping the essential attributes of the system's structure and processes constant. For example: responding to increased enrollment by hiring more teachers; adjusting the clothing to suit the weather
Maintenance (Corrective)	Maintenance performed to correct faults (defects) in hardware or software.
Maintenance (perfective)	Maintenance performed to improve the performance, maintainability, or other attributes of a system.
Measure	One of several measurable values that contribute to the understanding and quantification of a key performance indicator
Metrics	The elements of a measurement system consisting of key performance indicators, measures, and measurement methodologies
Migration	The process of transferring all or part of AIS's functionality, data, or communications to another technical infrastructure; the original application code may be ported or replaced. The business data (and its schema) is usually retained in a significant way.
Mission	An enduring statement of purpose; the organization's reason for existence; the mission describes what the organization does, who it does it for, and how it does it. (National Performance Review)
MMIS	Medicaid Management Information System
NC	North Carolina
NC FAST	NC Families Accessing Services through Technology
Noncompliance	An instance where performance of a task or a resultant work product does not follow the agreed upon procedures, descriptions, standards, or other requirements; a noncompliance is generally found through QA reviews and audits and formally tracked until it is resolved.
Objective	A broad, general direction or intent
Open Dependency	Reliance that may result in partial failure to the receiving project
Open system (environment)	An AIS that is built to a set of specifications that are nonproprietary, allowing the system to better interoperate, scale, or allow for porting of applications across heterogeneous, multi-vendor computing platforms.
Organization	A logical grouping of people and resources (including information) for accomplishing some aspect of the mission of an Enterprise
OSBM	Office of State Budget and Management
Packaged solution	An integrated collection of software, hardware, or other parts provided by vendors as a basis for developing solutions to common business domain functions; a packaged solution is often highly tailorable at the design level to meet Enterprise-unique needs. Systems transferred from one State and adapted for another are in this category.
Performance measure	A quantitative or qualitative characterization of performance (National Performance Review)

Term	Definition
Plateau (evolution planning)	An incremental level of capability at which the Department operates, as it moves to achieve its vision in accordance with the strategy; it is a point where the Department can reevaluate the progress being made; note significant changes in the Department's external, internal, or IT Division conditions; and readjust plans. Plateaus can be represented in the IT Evolution Plan as intermediate milestones.
Platform	See: Application platform
Plug-in	A program that can be downloaded and installed on demand to be used as part of a Web browser; a plug-in is generally a small program that is activated by the Web browser to perform special processing of objects within the HTML document, such as viewing Portable Document Format (PDF) or streaming video objects.
Portability (porting)	Portability is a characteristic of a system (or part) that describes the ease with which the system (or part) can run on multiple, heterogeneous platforms. There are two general levels of portability: the binary-program level and the source-code level. Binary portability is exemplified by the Java language, whose byte codes are capable of executing on any computer that supports its runtime environment (Java Virtual Machine). Source code portability is generally achieved by coding to a recognized standard (e.g., ANSI C++) and APIs to facilitate program compilation in multiple target environments.
Portal	A (Web) application that provides a single means of access to many information sources and applications; portals typically provide personalization, collaboration, content management, security, and other services to users. A portal may serve one or more types of users within or across Department boundaries, such as clients, caseworkers, or service providers.
Process	A sequence of activities that transforms or uses inputs to produce outputs.
Profile	A profile is a collection of specifications developed to meet a set of requirements. Elements of a profile may consist of either formal standards (i.e., those developed within a voluntary standards organization such as ANSI or IEEE) or de facto standards (i.e., those accepted within the marketplace). Each element of a profile may be a specification in its entirety or a specification with certain options or parameters to be chosen. The NIST APP organizes the standards into several services areas: Operating System, Human Computer Interface, Software Engineering, Data Management, Data Interchange, Graphics, and Network Services.
Project	An effort, directed toward achieving a specific goal that has been assigned specific resources and duration. Projects are the context in which all development work is done for a program.
Quality assurance	A planned and systematic set of actions to provide adequate confidence that work products and the processes used to produce them conform to established requirements.
Reengineering	The examination of a system to extract inherent knowledge and functionality followed by the implementation of equivalent capability in a new system; the new implementation may include modifications for changed requirements not part of the original system. Also known as renovation and reclamation
Resource	That which is used or consumed by the Enterprise in fulfillment of its objectives
Restructuring	A process to reorganize a system in another form, preserving the original system's external behavior (functional and semantics)
Return on investment (IT)	The gains achieved from spending on IT for the Department.
Reverse engineering	The examination of a system to extract inherent knowledge and functionality with the express purpose of creating an abstract model or specification of the system (does not involve changing the subject system).
RFP	Request for Proposal
RIS	Refugee Information System

Term	Definition
Role	A unit of defined responsibility that may be assumed by one or more individuals (e.g., a team that fulfills the planner responsibilities)
Scalable	A scalable application system is one that can increase its throughput without significantly increasing its cost per user (or cost per transaction). The system should also be able to scale down as well.
Service	A capability that a provider entity makes available to a user entity at the interface between those entities (e.g., a Web service)
SFY	State Fiscal Year
SSA	Social Security Administration
STA	Statewide Technical Architecture
Standard	A special case, or type of specification, that has been through a formal ballot in a group open to wide participation, and have a known community of consensus. These formal standards may be considered U.S. national standards.
Standard (de facto)	A proprietary specification that becomes widely adopted in the marketplace based on marketplace success, made available by the developer of the technology in a public or private domain (e.g., for a fee).
Standard (formal)	Standards that have been agree upon by a group open to wide participation. These standards have been through a defined balloting process.
Standard (international)	A standard developed and successfully balloted outside the U.S., using an approach that may vary greatly from the U.S. approach. The scope of ballot is global (e.g., ISO/IEC).
Standard (private or proprietary)	Specification developed within an organization; may be protected by intellectual property restrictions or agreement prior to use.
Standard (public)	Any specification that has established some consensus but has not been formally balloted; usually a proprietary specification that became widely adopted in the marketplace.
Standard (regional)	A standard developed and successfully balloted outside the U.S., using an approach that may vary greatly from the U.S. approach. Regional is when the scope of ballot is limited to a specific part of the world (e.g., European, Pacific Rim, or North American) as opposed to international.
Standard (U.S. national)	A standard developed and successfully balloted inside the U.S., usually by a voluntary standards organization subject to basic ANSI guidelines.
Strategic planning	Those actions that lead to the definition of the IT organization's mission, the formulation of its goals, and the definition of the essential action to be implemented to meet those goals.
Strategy	Strategies are the "hows" of pursuing a mission and achieving goals. A strategy is a managerial action plan for achieving targeted outcomes, mirrored in the pattern of moves and approaches devised to produce desired results.
Strategy project	A managed set of activities that generate the IT Strategic Plan
System architecture	The model(s) that describes how the major IT elements (equipment, data sources, applications, and networking) are arranged to provide or exchange services between the elements and external entities (people or automated systems)
Target Application Platform	A Target Application Platform is the realization of an application platform described in the Target Architecture, using appropriately adapted custom or vendor provided frameworks (software and hardware products). The Target Application Platform is the physical environment upon which the applications for AIS are built, executed, and maintained.

Term	Definition
Target Architecture	The Target Architecture is the design for an instance of elements defined in the Technical Architecture. A Target Architecture elaborates the Technical Architecture by binding specific versions of software, hardware, data stores, and networking implementations to abstract Technical Architecture descriptions. A target Application Platform, for example, is a realization of an application platform described in the Technical Architecture, using appropriately adapted vendor provided frameworks (software and hardware products).
Task	In the context of project management, this is a well-defined unit of work that can be assigned to individuals to perform, and tracked to completion
Technical Architecture	A Technical Architecture identifies and describes the types of applications, platforms, and external entities; their interfaces; and their services; as well as the context within which the entities interoperate. A Technical Architecture is based on a Technical Reference Model (TRM) and the selected standards that further describe the TRM elements (the profile). The Technical Architecture is the basis for selecting and implementing the infrastructure to establish the target architecture.
Technical Reference Model	A taxonomy of services arranged according to a conceptual model, such as the Open System Environment model. The enumerated services are specific to those needed to support the technology computing style (e.g., distributed object computing) and the industry/business application needs (e.g., Human Services, financial).
Tier (n-tier)	A physical partitioning of an application across three or more networked computer platforms, such as user interface, business logic, and data access and storage functions.
Transcoding	The process of dynamically transforming data as it is delivered so that it is optimally formatted for the destination environment. Transcoding can be applied in many situations: character encoding (internationalization), addressing differences in link speed or display screen form factors (wireless), or converting between video compression formats.
Value chain	The collection of activities within a company that allow it to compete within an industry; the activities in a value chain can be grouped into two categories: primary activities, which include inbound logistics, outbound logistics and after-sales service, and support activities, which include human resources management, Department infrastructure, procurement, and technology development.
Vision	A guiding theme that articulates the nature of the organization's operation (business) and the intent for its future. It is a description of what senior management wants to achieve, usually refers to the mid- to long-term, and often is expressed in terms of a series of goals.
Web service	A unit of application logic providing data and services to other applications via ubiquitous Web protocols and data formats such as HTTP, XML, and SOAP. The service implementation (and physical location) is generally hidden from the user of the service.
Zero Dependency	The state of not being reliant

5.2. Document References

5.2.1. Federal Government Documents

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5.2.2. NC Government Documents

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5.2.3. Non-government Documents

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5.2.4. Order of Precedence

- In the event of conflict between this *IT Architecture* and other documents referenced herein, the documentation requirements of this standard shall apply.
- All documents referenced are to the identified issues/versions unless otherwise stated. Where no issue/version is quoted, the issue/version in force at the date of actual agreement/contract shall apply. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

End of Document